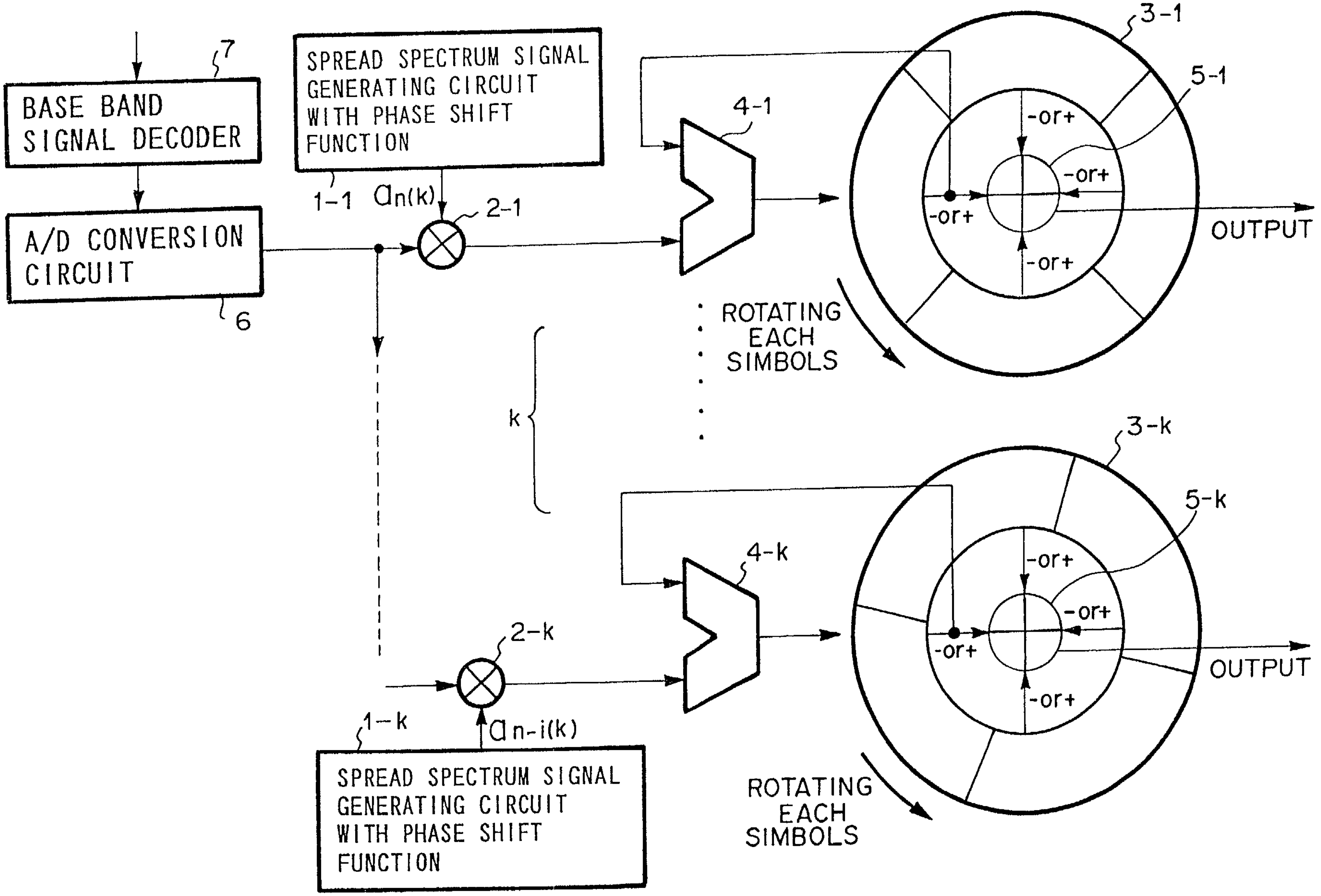
09916276.073001

FIG.1



F I G.2

SYMBOL (ORTHOGONAL CODE)	POLARITY OF SYMBOL ADDITION(RING BUFFER)	CORRESPONDING DATA
1111	++++	11(HEADER)
1010	++++	10
1100	++−−	01
1001	+−−+	00

F I G. 3

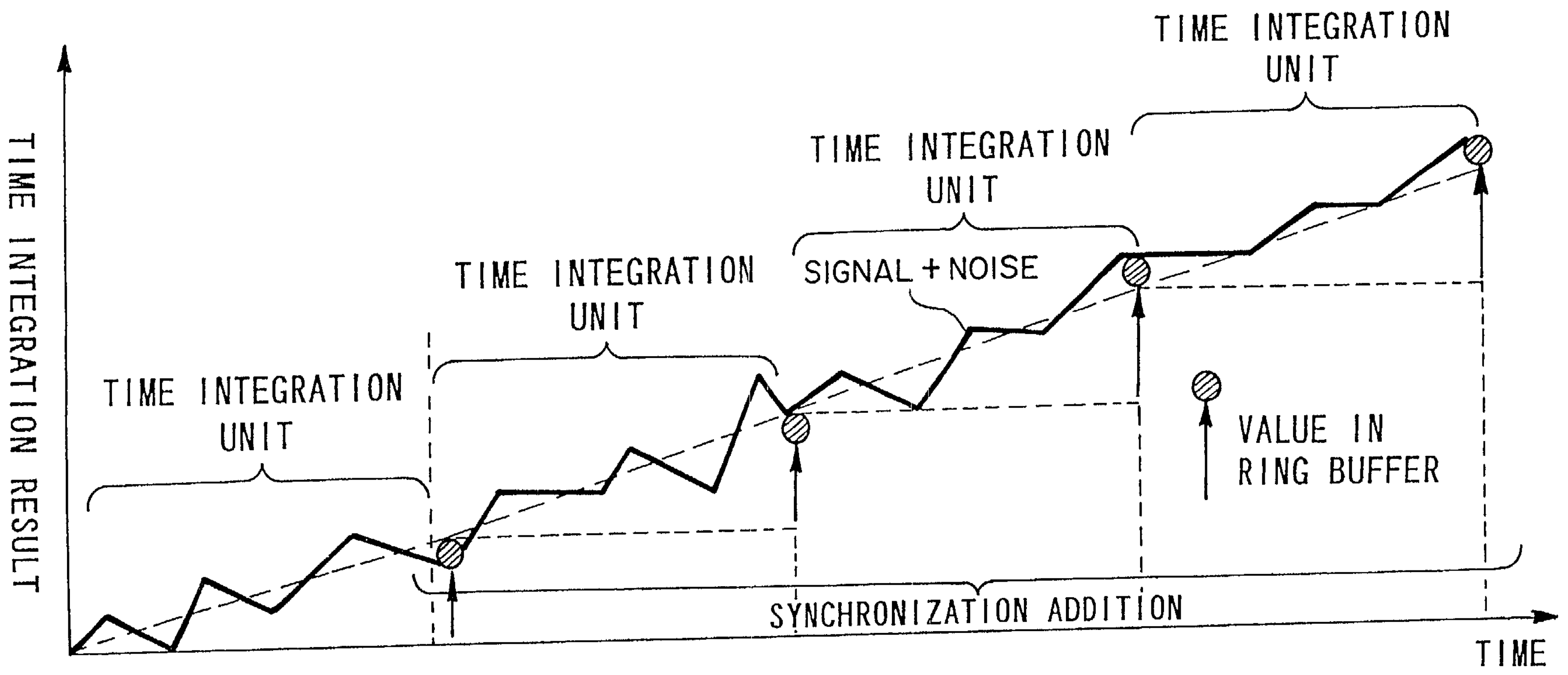
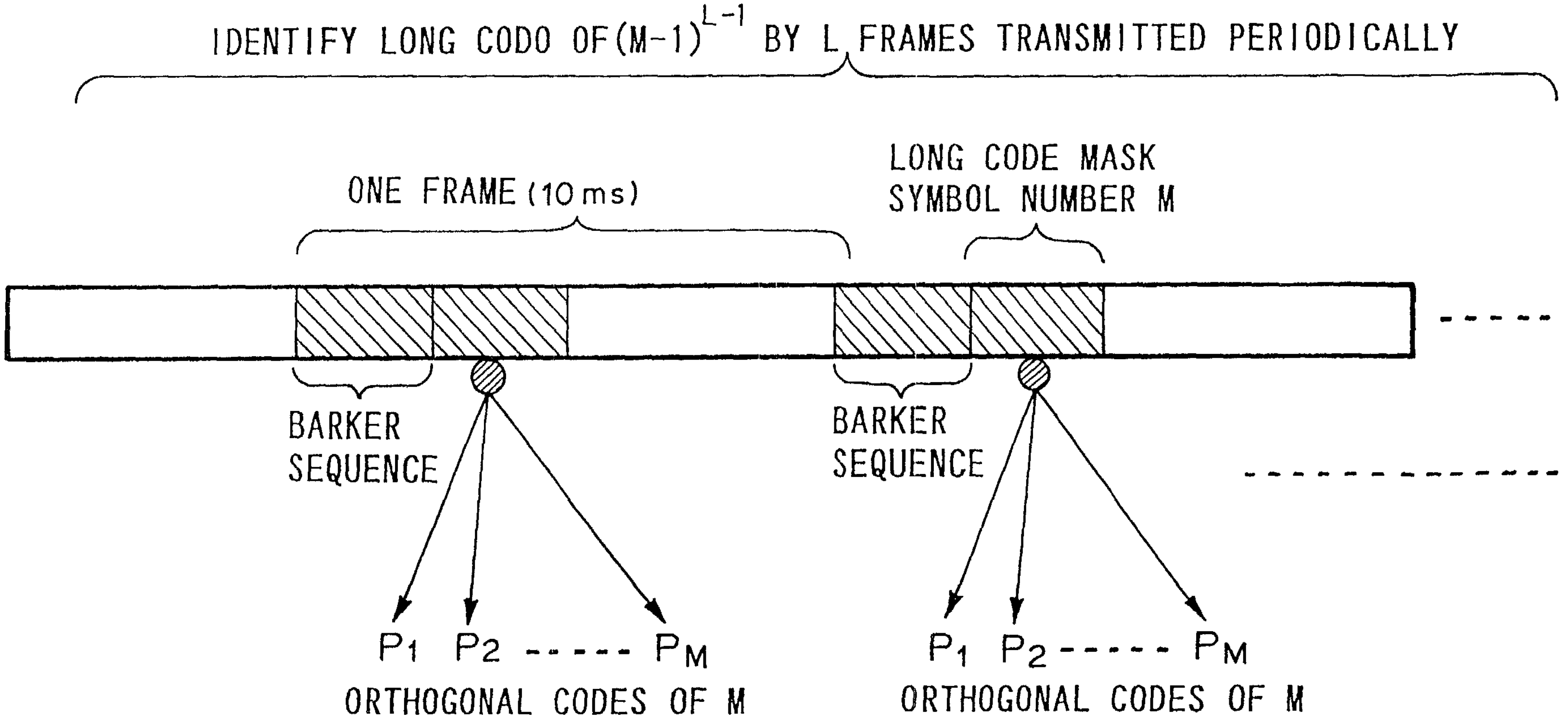
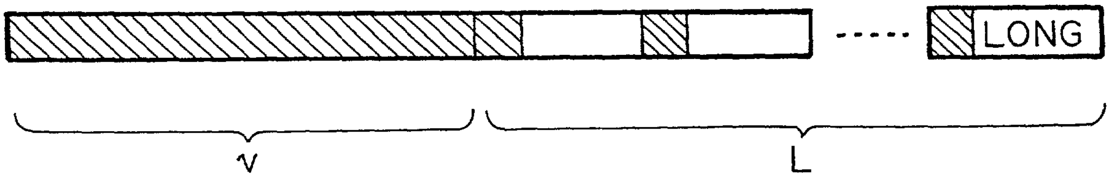

TIME INTEGRATION RESULT
TIME INTEGRATION UNIT
TIME INTEGRATION UNIT
TIME INTEGRATION UNIT
TIME INTEGRATION UNIT
SIGNAL + NOISE
VALUE IN RING BUFFER
SYNCHRONIZATION ADDITION
TIME

FIG.4


IDENTIFY LONG CODO OF $(M-1)^{L-1}$ BY L FRAMES TRANSMITTED PERIODICALLY
ONE FRAME (10 ms)
LONG CODE MASK SYMBOL NUMBER M
BARKER SEQUENCE
BARKER SEQUENCE
P_1 P_2 ----- P_M
ORTHOGONAL CODES OF M
P_1 P_2 ----- P_M
ORTHOGONAL CODES OF M

09519275 .030301

FIG.5



F I G.6

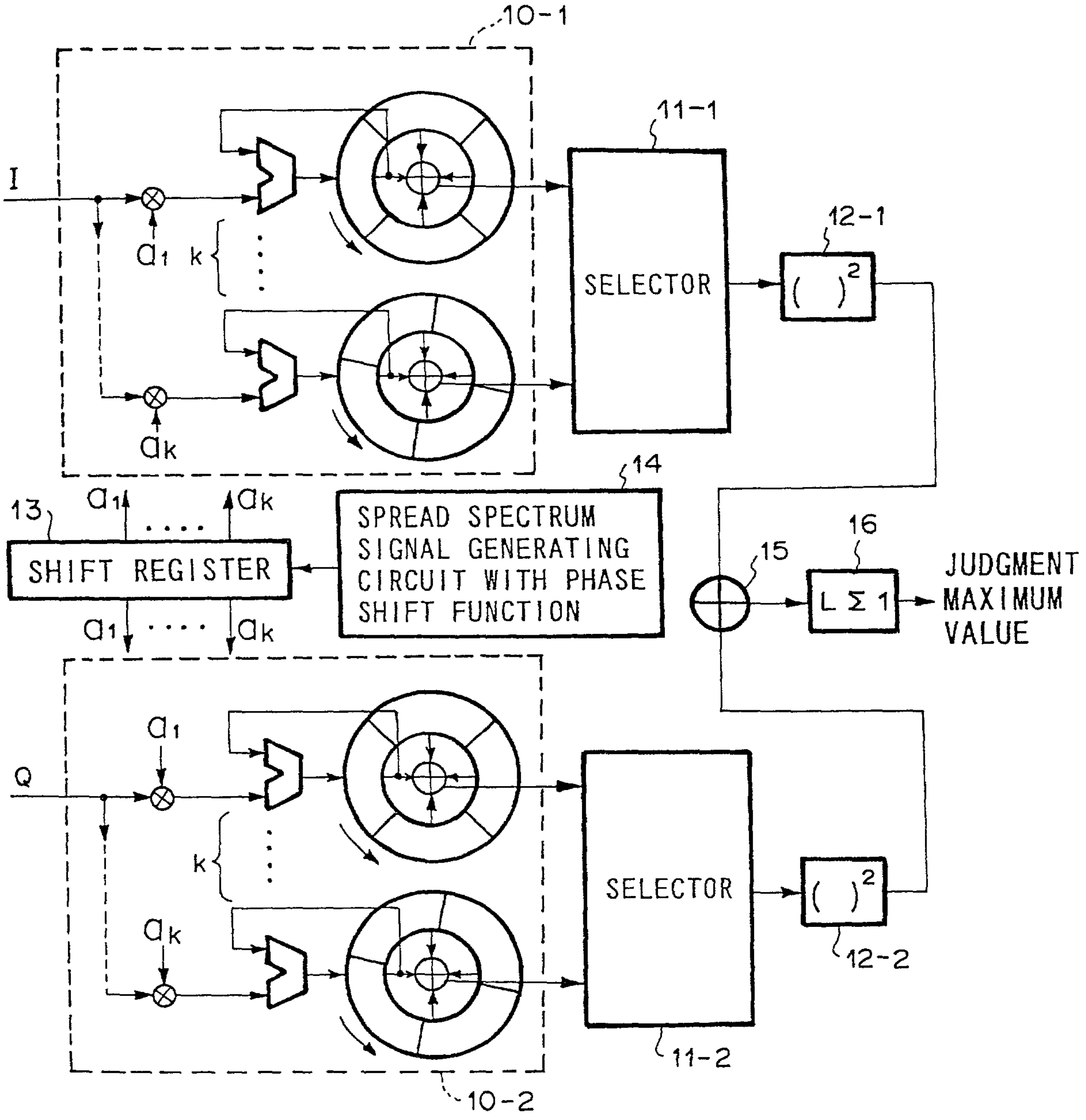
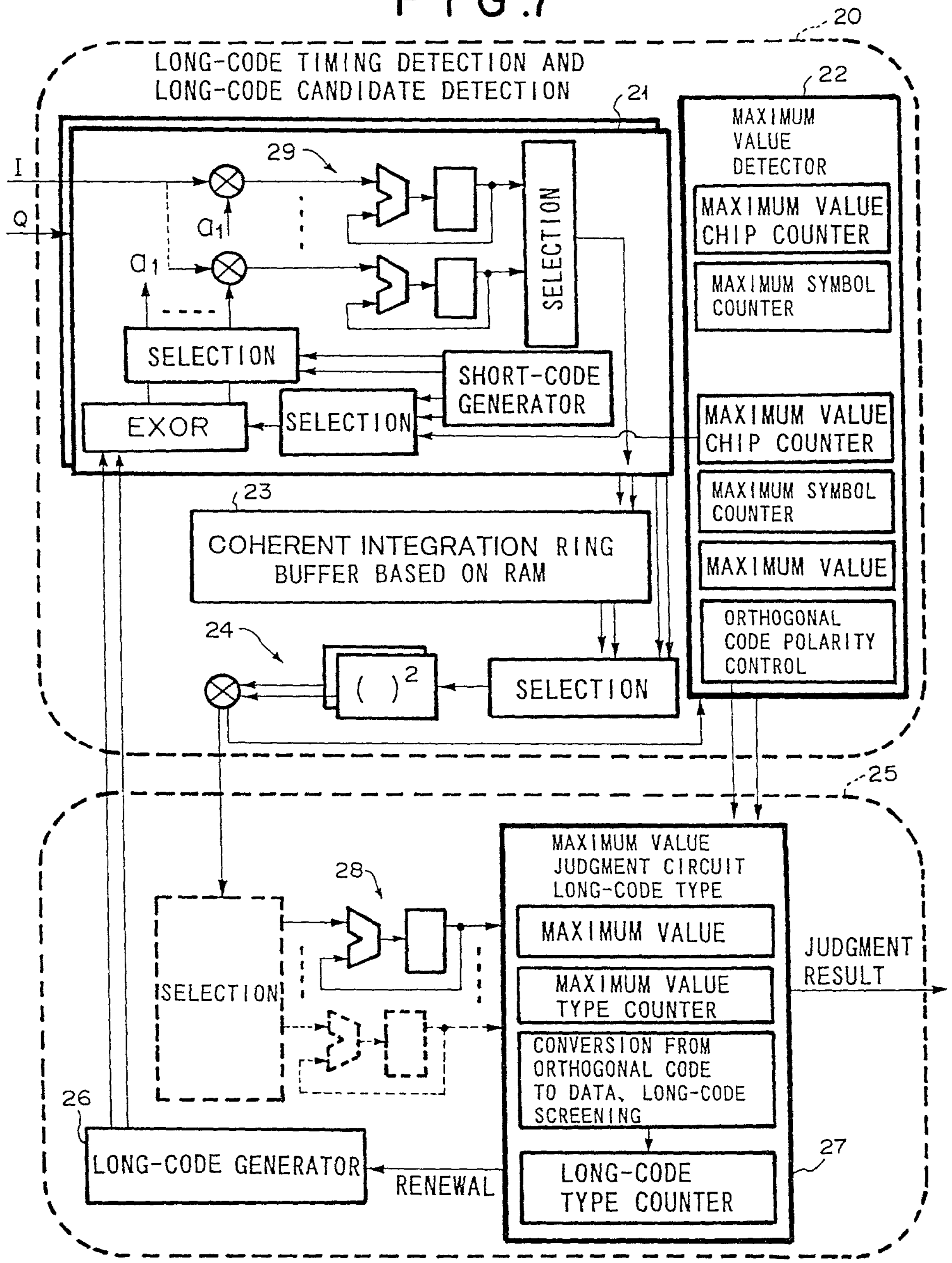

10-1
11-1
I
SELECTOR
12-1
( )²
a1
k
ak
14
13
a1
....
ak
SPREAD SPECTRUM SIGNAL GENERATING CIRCUIT WITH PHASE SHIFT FUNCTION
SHIFT REGISTER
16
15
L Σ 1
JUDGMENT MAXIMUM VALUE
a1
....
ak
a1
Q
k
SELECTOR
( )²
ak
12-2
11-2
10-2

FIG.7


20
LONG-CODE TIMING DETECTION AND
LONG-CODE CANDIDATE DETECTION
21
22
MAXIMUM
VALUE
DETECTOR
I
Q
29
a_1
a_1
SELECTION
MAXIMUM VALUE
CHIP COUNTER
MAXIMUM SYMBOL
COUNTER
SELECTION
SHORT-CODE
GENERATOR
EXOR
SELECTION
MAXIMUM VALUE
CHIP COUNTER
MAXIMUM SYMBOL
COUNTER
23
COHERENT INTEGRATION RING
BUFFER BASED ON RAM
MAXIMUM VALUE
24
$(\ )^2$
SELECTION
ORTHOGONAL
CODE POLARITY
CONTROL
25
MAXIMUM VALUE
JUDGMENT CIRCUIT
LONG-CODE TYPE
28
MAXIMUM VALUE
SELECTION
MAXIMUM VALUE
TYPE COUNTER
JUDGMENT
RESULT
CONVERSION FROM
ORTHOGONAL CODE
TO DATA、LONG-CODE
SCREENING
26
27
LONG-CODE GENERATOR
RENEWAL
LONG-CODE
TYPE COUNTER

F I G .8

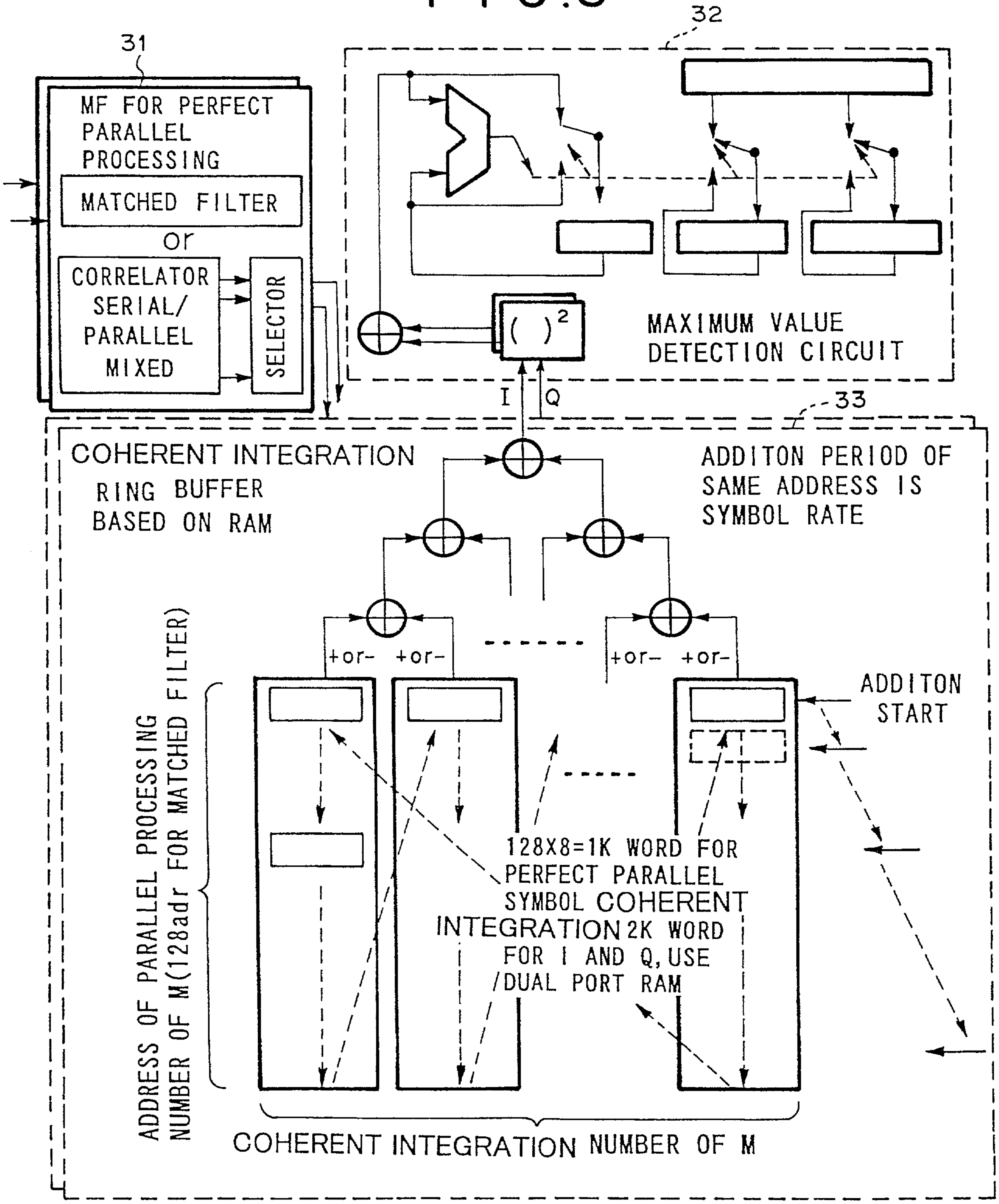

32
31
MF FOR PERFECT PARALLEL PROCESSING
MATCHED FILTER
or
CORRELATOR SERIAL/ PARALLEL MIXED
SELECTOR
( )²
MAXIMUM VALUE DETECTION CIRCUIT
I
Q
33
COHERENT INTEGRATION
RING BUFFER BASED ON RAM
ADDITON PERIOD OF SAME ADDRESS IS SYMBOL RATE
+or-
+or-
+or-
+or-
ADDITON START
ADDRESS OF PARALLEL PROCESSING NUMBER OF M(128adr FOR MATCHED FILTER)
128X8=1K WORD FOR PERFECT PARALLEL SYMBOL COHERENT INTEGRATION 2K WORD FOR I AND Q, USE /DUAL PORT RAM
COHERENT INTEGRATION NUMBER OF M

FIG.9

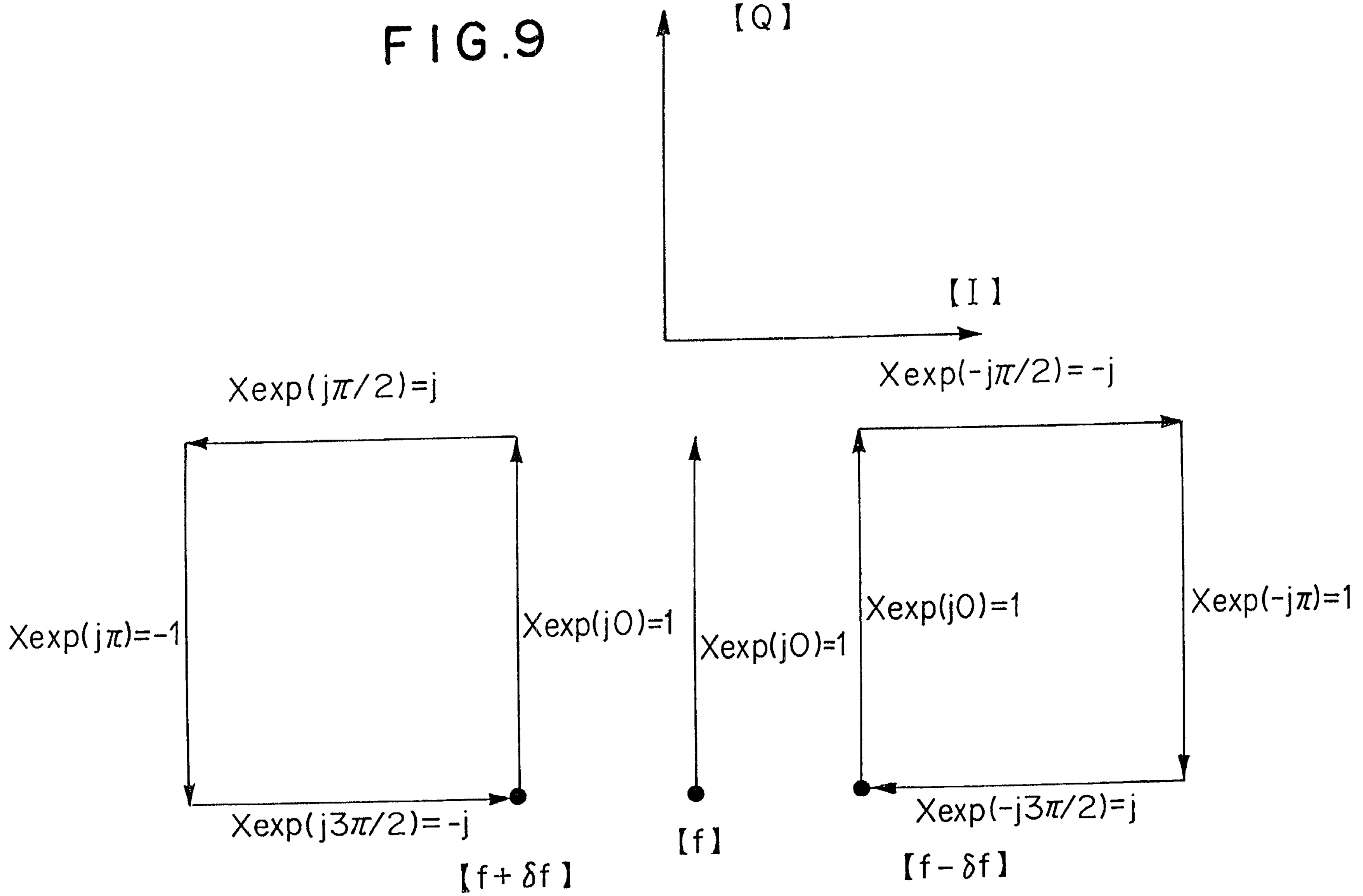

[Q]
[I]
Xexp(jπ/2)=j
Xexp(-jπ/2)=-j
Xexp(jπ)=-1
Xexp(j0)=1
Xexp(j0)=1
Xexp(j0)=1
Xexp(-jπ)=1
Xexp(j3π/2)=-j
Xexp(-j3π/2)=j
[f+δf]
[f]
[f-δf]

FIG.10

FREQUENCY DEVIATION / TIME (PHASE)		$f+\delta f$		f		$f-\delta f$	
		I	Q	I	Q	I	Q
t_0	0	a	b	a	b	a	b
t_1	$\pi/2$	−b	a	a	b	b	−a
t_2	π	−a	−b	a	b	−a	−b
t_3	$3\pi/2$	b	−a	a	b	−b	a

- CARRIER FREQUENCY DEVIATION COHERENT INTEGRATION

[$f+\delta f$] I : $I(t=t_0)-Q(t=t_1)-I(t=t_2)+Q(t=t_3)$
Q : $Q(t=t_0)+I(t=t_1)-Q(t=t_2)-I(t=t_3)$

[f] I : $I(t=t_0)+I(t=t_1)+I(t=t_2)+I(t=t_3)$
Q : $Q(t=t_0)+Q(t=t_1)+Q(t=t_2)+Q(t=t_3)$

[$f+\delta f$] I : $I(t=t_0)+Q(t=t_1)-I(t=t_2)-Q(t=t_3)$
Q : $Q(t=t_0)-I(t=t_1)-Q(t=t_2)+I(t=t_3)$